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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,157	07/12/2001	Nathan S. Lewis	1034345-000200	2732

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EXAMINER	
DOTY, HEATHER ANNE	

ART UNIT	PAPER NUMBER
2813	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/905,157	LEWIS ET AL.	
	Examiner	Art Unit	
	Heather A. Doty	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-8,13,16-27,31-40 and 44-54* is/are pending in the application.

4a) Of the above claim(s) *6-8,18-20 and 31-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5,13,16,17,21-27 and 44-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to the amendment and remarks filed 10/17/2006.

Claim Objections

The cancellation of claim 43 and amendment to claim 54 have overcome the objections made in the previous Office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless – (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13, 16, 17, 21, 25-27, and 49-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Linford et al. (U.S. 5,429,708).

Regarding claims 13 and 16, Linford discloses a semiconductor substrate comprising providing an, *inter alia*, monocrystalline silicon-containing material **12** (col. 1, lines 17-21) having a porosity of not more than 30% (nonporous monocrystalline silicon-containing material has a porosity of less than 30%), H-terminated (abstract; col. 1, lines 17-21), and having a surface **40** substantially free of oxidation (as shown in Figs. 2A, 2B, 3, etc.; and as stated at col. 2, lines 6-45); and forming an organic monolayer—further limited by claim 16—**44**, **45**, **46** having more than half of its atoms being carbon and hydrogen (because R is, *inter alia*, alkyl, alkenyl, aryl, cycloalkyl...." (col. 5, lines 5-13) which are 100% carbon and hydrogen), wherein the organic layer is chemically bonded to the surface **10**, **30**, **32**, **38** of the silicon-containing material **12** (col. 2, lines 6-45), and wherein an electrical property of the electrical structure is altered and/or

improved compared to a same substrate without the organic layer, as indicated by Linford (col. 1, lines 21-31; paragraph bridging cols. 8-9; all figures).

For example, Linford states in the paragraph bridging cols. 8-9,

> "For example, such molecular layers are suitable for use with: silicon based, micromechanical devices to minimize stiction; **electrode surfaces** to **optimize** their **electrochemical properties** for use in **fuel cells** or **electrochemical synthetic cells**; **solar cells as an antioxidation coating**, silicon chips as a monomolecular photoresist, and Si-based chemical sensors to **alter the electrical properties** of the underlying Si." (Emphasis added.)

The word "optimization," by definition, is to improve, and the word "alter" is a synonym of the word "change." Accordingly, Linford expressly and inherently teaches both changing and improving the electrical properties of the semiconductor substrate.

It is seen to be inherent that the organic layer of Linford changes the electrical property of the silicon-containing material, wherein the electrical properties are selected from a group consisting of surface recombination velocity, carrier lifetime, electronic efficiency, voltage, contact resistance, and resistance of a doped region, in addition to those regarding the carrier lifetime—further limited by claims 49-53. Evidence is the admission of Applicant in the instant specification (for example at p. 7, paragraph 0031 and paragraph 0056, bridging pp. 15-16).

See *In re Swinhart*, 169 USPQ 226,229 (CCPA 1971) (where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that subject matter shown to be in the prior art does not possess the characteristics relied on) and *In re*

Fitzgerald, 205 USPQ 594 (CCPA 1980) (the burden of proof can be shifted to the applicant to show that subject matter of the prior art does not possess the characteristic relied on whether the rejection is based on inherency under 35 U.S.C. 102 or obviousness under 35 U.S.C. 103).

Note that as long as there is evidence of record establishing inherency, failure of those skilled in the art to contemporaneously recognize an inherent property, function or ingredient of a prior art reference does not preclude a finding of anticipation. *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1349, 51 USPQ2d 1943, 1948 (Fed. Cir. 1999). (Two prior art references disclosed blasting compositions containing water-in-oil emulsions with identical ingredients to those claimed, in overlapping ranges with the claimed composition. The only element of the claims arguably not present in the prior art compositions was "sufficient aeration . . . entrapped to enhance sensitivity to a substantial degree." The Federal Circuit found that the emulsions described in both references would inevitably and inherently have "sufficient aeration" to sensitize the compound in the claimed ranges based on the evidence of record (including test data and expert testimony). This finding of inherency was not defeated by the fact that one of the references taught away from air entrapment or purposeful aeration.). See also *In re King*, 801 F.2d 1324, 1327, 231 USPQ 136, 139 (Fed. Cir. 1986); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 778 (Fed. Cir. 1985).

In the decision in *Toro Co. v. Deere & Co.*, 69 USPQ2d 1584 (CA FC 2004), at page 1590, last paragraph, it was held that if "one or more embodiments -- whatever the

settings of their operational features – [] necessarily include or result in the subject matter of [the] limitation," then inherent anticipation of the limitation exists.

Regarding claim 17, the organic layer is a polymer **46** (Fig. 12; col. 5, lines 37-45).

Regarding claim 21, the organic layer is formed by activating the surface of the silicon-containing material; and reacting the activated surface with a chemical, wherein during the reaction, a hydrocarbon group becomes chemically bonded to the silicon-containing material (col. 2, lines 6-45).

Regarding claim 25, the hydrocarbon is an allyl, called "alkenyl" and structurally described as "-C(R)=CH(R')" for example, in Linford (col. 5, lines 5-34).

Regarding claim 26, a polymer is formed by reaction with the surface-bound allyl group (col. 5, lines 37-46; paragraph bridging cols. 5 and 6).

Regarding claims 27 and 53, the hydrocarbon group is an alkoxide group (col. 4, lines 44-49; Fig. 5).

Regarding claims 49-52, Linford teaches a methylated surface (col. 8, lines 9-15), an ethylated surface (alkyl with 2 carbons and 5 hydrogens), and a hexylated surface (alkyl with 6 carbons and 13 hydrogens—column 5, line 7).

Regarding claim 54, Linford discloses a semiconductor substrate comprising providing an, *inter alia*, monocrystalline or porous silicon-containing material **12** (col. 1, lines 17-21) having a surface **40** substantially free of oxidation (as shown in Figs. 2A, 2B, 3, etc.; and as stated at col. 2, lines 6-45); and forming an organic monolayer (**44**, **45**, **46)** having more than half of its atoms being carbon and hydrogen (because R is,

inter alia, alkyl, alkenyl, aryl, cycloalkyl...." (col. 5, lines 5-13) which are 100% carbon and hydrogen), wherein the organic layer is chemically bonded to the surface **10**, **30**, **32**, **38** of the silicon-containing material **12** (col. 2, lines 6-45), and wherein an electrical property of the electrical structure is changed compared to a same substrate without the organic layer, as indicated by Linford (col. 1, lines 21-31; paragraph bridging cols. 8-9; all figures).

For example, Linford states in the paragraph bridging cols. 8-9,

> "For example, such molecular layers are suitable for use with: silicon based, micromechanical devices to minimize stiction; **electrode surfaces** to **optimize** their **electrochemical properties** for use in **fuel cells** or **electrochemical synthetic cells**; **solar cells as an antioxidation coating**, silicon chips as a monomolecular photoresist, and Si-based chemical sensors to **alter the electrical properties** of the underlying Si." (Emphasis added.)

The word "optimization," by definition, is to improve, and the word "alter" is a synonym of the word "change." Accordingly, Linford expressly and inherently teaches both changing and improving the electrical properties of the semiconductor substrate.

It is seen to be inherent that the organic layer of Linford changes the electrical property of the silicon-containing material, wherein the electrical properties are selected from a group consisting of surface recombination velocity, carrier lifetime, electronic efficiency, voltage, contact resistance, and resistance of a doped region, in addition to those regarding the carrier lifetime. Evidence is the admission of Applicant in the instant specification (for example at p. 7, paragraph 0031 and paragraph 0056, bridging pp. 15-16).

See *In re Swinhart*, 169 USPQ 226,229 (CCPA 1971) (where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that subject matter shown to be in the prior art does not possess the characteristics relied on) and *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980) (the burden of proof can be shifted to the applicant to show that subject matter of the prior art does not possess the characteristic relied on whether the rejection is based on inherency under 35 U.S.C. 102 or obviousness under 35 U.S.C. 103).

Note that as long as there is evidence of record establishing inherency, failure of those skilled in the art to contemporaneously recognize an inherent property, function or ingredient of a prior art reference does not preclude a finding of anticipation. *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1349, 51 USPQ2d 1943, 1948 (Fed. Cir. 1999). (Two prior art references disclosed blasting compositions containing water-in-oil emulsions with identical ingredients to those claimed, in overlapping ranges with the claimed composition. The only element of the claims arguably not present in the prior art compositions was "sufficient aeration . . . entrapped to enhance sensitivity to a substantial degree." The Federal Circuit found that the emulsions described in both references would inevitably and inherently have "sufficient aeration" to sensitize the compound in the claimed ranges based on the evidence of record (including test data and expert testimony). This finding of inherency was not defeated by the fact that one of the references taught away from air entrapment or purposeful aeration.). See also *In re*

King, 801 F.2d 1324, 1327, 231 USPQ 136, 139 (Fed. Cir. 1986); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 778 (Fed. Cir. 1985).

In the decision in *Toro Co. v. Deere & Co.,* 69 USPQ2d 1584 (CA FC 2004), at page 1590, last paragraph, it was held that if "one or more embodiments -- whatever the settings of their operational features – [] necessarily include or result in the subject matter of [the] limitation," then inherent anticipation of the limitation exists.

Claims 13, 16, 21-24, and 49-52 are rejected under 35 U.S.C. 102(b) as being anticipated by the article Bansal et al. (an instant inventor, Nathan S. Lewis being listed as a co-author) "Alkylation of Si surfaces using a two-step halogenation/Grignard route," Journal of the American Chemical Society, Vol. 118, 1996, pp. 7225-7226.

Regarding independent claim 13, Bansal discloses a process of forming a semiconductor substrate and the substrate produced thereby comprising, providing a hydrogen-terminated—further limited by claim 41—monocrystalline silicon substrate having a porosity of not more than 30% (nonporous monocrystalline silicon has a porosity of not more than 30%); activating the hydrogen-terminated silicon surface, substantially free of oxidation, by chlorinating the hydrogen-terminated surface—as further limited by instant claims 21 and 22; and reacting the activated silicon surface with an alkyl lithium or Grignard reagent to replace the chlorine atoms of the terminated sites with a monolayer of the alkyl group of the alkyl lithium or Grignard reagent, wherein the exemplary alkyl groups have 1 (methyl), 2 (ethyl), 4 (butyl), 5 (pentyl), 6 (hexyl), 10 (decyl), 12 (dodecyl), or 18 (octadecyl) carbons—as further limited by instant claims 16, 23, 24, and 49-52.

While Bansal does not discuss the electrical properties (such as carrier lifetime) of the alkylated silicon substrate, it is held, absent evidence to the contrary, that the alkylated silicon substrate must have all of the same properties, electrical or otherwise, since the structure is the same as disclosed and claimed, and therefore reads on the properties as claimed in claims 13, and 49-52. (Compare the Bansal method to one of the methods of the instant specification, as recited in paragraphs 0046-0047 and 0066-0070, being claimed by Applicant to give the claimed electrical properties in the alkylated silicon substrate. Applicant's admissions in the instant specification provide additional evidence of inherency.)

In this regard, the following case law is believed relevant. In the decision in *Toro Co. v. Deere & Co.*, 69 USPQ2d 1584 (CA FC 2004), at page 1590, last paragraph, it was held that if "**one or more embodiments**—whatever the settings of their operational features— [] necessarily include or result in the subject matter of [the] limitation," then inherent anticipation of the limitation exists. (Emphasis added.)

The claiming of a new use, new function, or unknown property that is inherently present in the prior art does not necessarily make the claim patentable. See *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). Anticipation by a prior art reference **does not require the inventive concept of the claimed subject matter or the recognition of inherent properties that may be possessed by the prior art reference**. See *Verdegaal Bros. Inc. v. Union Oil Co.*, 814 F.2d 628, 633, 2 USPQ2d 1051, 1054 (Fed. Cir.), cert. denied, 484 U.S. 827 (1987). A prior art reference anticipates the subject matter of a claim when the reference discloses every feature of

the claimed invention, either explicitly or inherently. See *Hazani v. Int'l Trade Comm'n*, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1351 (Fed. Cir. 1997) and *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 14.44, 221 USPQ 385, 388 (Fed. Cir. 1984). **The law of anticipation does not require that the reference teach what the appellants are claiming**, but only that the claims on appeal "read on" something disclosed in the reference. See *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 CSPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984). Note that as long as there is evidence of record establishing inherency, failure of those skilled in the art to contemporaneously recognize an inherent property, function or ingredient of a prior art reference does not preclude a finding of anticipation. *Atlas Powder Co. vs. IRECO, Inc.*, I 90 F.3d 1342, 1349, 51 USPQ2d 1943, 1948 (Fed. Cir. 1999). (Two prior art references disclosed blasting compositions containing water-in-oil emulsions with identical ingredients to those claimed, in overlapping ranges with the claimed composition. The only element of the claims arguably hot present in the prior art compositions was "sufficient aeration...entrapped to enhance sensitivity to a substantial degree." The Federal Circuit found that the emulsions described in both references would inevitably and inherently have "sufficient aeration" to sensitize the compound in the claimed ranges based on the evidence of record (including test data and expert testimony). This finding of inherency was not defeated by the fact that one of the references taught away from air entrapment or purposeful aeration.). See also *In re King*, 801 F.2d 1324, 1327, 231 USPQ 136, 139 (Fed. Cir. 1986); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 778 (Fed. Cir. 1985).

See *In re Swinhart*, 169 USPQ 226,229 (CCPA 1971) (where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that subject matter shown to be in the prior art does not possess the characteristics relied on) and *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980) (the burden of proof can be shifted to the applicant to show that subject matter of the prior art does not possess the characteristic relied on whether the rejection is based on inherency under 35 U.S.C. 102 or obviousness under 35 U.S.C. 103).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 5, and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stengl et al. (U.S. 5,360,759) in view of Linford et al. (U.S. 5,429,708).

Regarding claim 1, Stengl et al. teaches a semiconductor substrate comprising a region of monocrystalline porous silicon-containing material (region 36 in Fig. 4 was epitaxially grown on single-crystal silicon and is therefore itself monocrystalline, and subsequently anodically etched to become porous—column 4, line 97 – column 5, line 45); and an organic layer immediately adjacent to the region of monocrystalline porous

silicon (photoresist mask not shown in Fig. 4; column 5, lines 28-30), bonded to the surface of the silicon-containing material.

Stengl et al. does not specify that the silicon-containing material is substantially free of oxidation. Stengl et al. also does not specify that the organic layer has more than half of its atoms being carbon and hydrogen, or that an electrical property selected from the claimed list is improved as compared to the electrical property of the substrate in the absence of the organic layer.

Linford discloses a semiconductor substrate comprising providing an, *inter alia*, monocrystalline or porous silicon-containing material **12** (col. 1, lines 17-21) having a surface **40** substantially free of oxidation (as shown in Figs. 2A, 2B, 3, etc.; and as stated at col. 2, lines 6-45); and forming an organic monolayer **44**, **45**, **46** having more than half of its atoms being carbon and hydrogen (because R is, *inter alia*, alkyl, alkenyl, aryl, cycloalkyl...." (col. 5, lines 5-13) which are 100% carbon and hydrogen), wherein the organic layer is chemically bonded to the surface **10**, **30**, **32**, **38** of the silicon-containing material **12** (col. 2, lines 6-45), and wherein an electrical property of the electrical structure is altered and/or improved compared to a same substrate without the organic layer, as indicated by Linford (col. 1, lines 21-31; paragraph bridging cols. 8-9; all figures). *Linford additionally teaches that this organic monolayer is suitable for use with silicon chips as a monomolecular photoresist* (sentence bridging columns 8-9).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use the organic monolayer (and the method of applying it—including removing any oxide layer) taught by Linford as the photoresist on the

substrate taught by Stengl et al. It is seen to be inherent that the organic layer of Linford changes the electrical property of the silicon-containing material beneath the organic layer in the resulting structure, wherein the electrical properties are selected from a group consisting of surface recombination velocity, carrier lifetime, electronic efficiency, voltage, contact resistance, and resistance of a doped region, in addition to those regarding the carrier lifetime—further limited by claims 44 and 48. Evidence is the admission of Applicant in the instant specification (for example at p. 7, paragraph 0031 and paragraph 0056, bridging pp. 15-16).

The motivation for doing so at the time of the invention would have been that the organic layer taught by Linford provides a substantial chemical and mechanical barrier, as expressly taught by Linford (column 8, lines 56-63).

Regarding claims 4 and 5, Linford teaches that the organic layer comprises a hydrocarbon (Table 1) and a polymer (Linford claim 32).

Regarding claims 44-47, Linford teaches a methylated surface (col. 8, lines 9-15), an ethylated surface (alkyl with 2 carbons and 5 hydrogens), and a hexylated surface (alkyl with 6 carbons and 13 hydrogens—column 5, line 7).

Regarding claim 48, Linford teaches an alkoxylated surface (col. 4, lines 44-49; Fig. 5).

Response to Arguments

Applicant's arguments filed 10/17/2006 have been fully considered but they are not persuasive.

Regarding claim 13, Applicant argues (top of p. 15) that since Linford et al. teaches a non-porous material, it does not read on the limitation that the substrate has a porosity of "not more than 30%". This argument is not persuasive because unlike claim 1, which claims a porous material having a porosity of not more than 30%, claim 13 simply claims a "monocrystalline silicon-containing material having a porosity of not more than 30%." A material having a porosity of 0% has a porosity of not more than 30%, and therefore reads on this limitation. If claim 13 limited the material to being porous and having a porosity of not more than 30%, Linford et al. would not read on it.

Applicant further argues that the examiner's reliance on inherency within the disclosure of Linford et al. to teach a silicon-containing material having an improved electrical property as a result of the surface application of an organic layer is misplaced, as demonstrated by the 1.132 Declaration already addressed in several previous Office actions (pp. 15-16). Applicant appears to disagree with the examiner's position that the 1.132 Declaration does not include enough information to prove that Linford et al. does not read on Applicant's claimed invention (pp. 17-18). Applicant states in the Declaration (point 4) that the included graph shows that a surface modified by a method according to Linford (using benzoyl peroxide as a radical initiator and 1-octene as the organic reactant) undergoes rapid lifetime decay upon exposure to air, and indicates that from this information the examiner should understand that Linford's method does

not result in a structure with improved electrical properties compared to the same structure without the organic layer.

It remains the examiner's position that this Declaration does not provide enough detail to conclude that the method taught by Linford et al. does not necessarily result in an improvement in the electronic properties of the substrate. It is not clear to the examiner based upon the 1.132 Declaration how the method taught by Linford et al. differs from the method recited in claim 13 or how the substrate taught by Linford et al. differs from the substrate claimed in claim 54, and therefore why the two methods shouldn't yield the same improvement in electrical properties. The examiner does not understand how the data presented in the graph necessarily teaches that the organic layer applied to a substrate using the method taught by Linford et al. does not result in an improved electrical property as compared to the same substrate without the organic layer. Applicant claims (p. 18) that such a comparison is not necessary. An improvement is defined relative to some initial set of conditions, in this case the electrical properties of the substrate without an organic layer. How can improvement be demonstrated based upon a single set of data? A graph showing an electrical property of a substrate before and after the application of the organic layer would be far more persuasive, if presented in such a manner that it was clear that it was the presence of the organic layer and not some other change in experimental conditions that yielded the results.

As for the so-called "when and who" requirement (p. 17), it was simply the examiner's point in the previous Office action that the paragraph explaining the data set

presented in the graph is sparse in scientific details. The examiner cannot fairly analyze scientific data and apply conclusions about the data to the question of patentability without understanding the origin of the data or the rigor of the experimentation that yielded the data.

Finally, Applicant warns the examiner that "failure to give probative weight to the Declarations...constitutes reversible error" (bottom of p. 17). The examiner has considered and given weight to the Declaration, and finds it insufficient to overcome the rejections made in this and previous Office actions. It is again noted that the examiner previously assigned to this application also found the Declaration insufficient to overcome the rejections.

Drawings

It is noted that a PTO 948 (Notice of Draftsperson's Patent Drawing Review) was issued on 10/15/2002, and to date no corrections have been received.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather A. Doty, whose telephone number is 571-272-8429. The examiner can normally be reached on M-F, 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

had

CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800